Author Index

Abrams, R.M., 1, 11, 30
Abran, D., 164
Alexander, J.M., 369
Alpan, G., 186
Anderson, P., 482
Andres, R.L., 91, 93, 154
Arheart, K.L., 426
Armant, D.R., 127
Artal, R., 211, 232, 263, 315, 328, 340
Ascuitto, R.J., 542

Beazley, D., 409
Bendon, R.W., 381
Bovenzi, M., 38
Bowers, P.N., 577
Brueckner, M., 577
Bry, K., 173, 194
Buehler, B.A., 93
Bung, P., 328

Camporesi, E.M., 292
Chao, C.R., 107
Chemtob, S., 164
Clapp, J.F., III, 70
Clark, E.B., 465
Clark, K.E., 115
Conover, B., 93
Cotton, R.B., 206
Cox, S.M., 369
Curtet-Eyal, N.L., 186

Duff, P., 401
Dye, T.D., 334

Eyal, F.G., 186

French, J.I., 344

Gerhardt, K.J., 11, 30
Goldstein, A.N., 520

Hachey, W.E., 186
Hale, R.W., 277
Hallman, M., 173, 194
Hanley, M.L., 418
Huch, R., 303

Iams, J.D., 439
Imseis, H.M., 439

Jaque-Fortunato, S.V., 232, 263, 340
Johnson, M.C., 564

Katz, V.L., 285
Kellum, F.E., 186
Khodiguian, N., 232, 263, 340
Kirby, M.L., 473
Kleinman, C.S., 463
Koppe, J., 161

Lambers, D.S., 115
Landry, S.H., 99
Lapalainen, U., 194
Leatherbury, L., 473
Lewis, R., 409, 451
Li, D.-Y., 164
Lindstrom, D.P., 206
Little, B.B., 147

McGregor, J.A., 344
Magnusson, M., 54
Mahony, L., 510
Mercer, B.M., 343, 389, 426, 451
Merenstein, G.B., 375
Milne, L., 277

Monga, M., 140
Mottola, M.F., 222

Oh, W., 161
Oldenettel, D., 334
Östgaard, H.C., 61

Parker, R.A., 206
Peri, K.G., 164
Pierson, L.J., 21
Pivarnik, J.M., 242
Pope, M.H., 54

Rabinovitch, M., 531
Ross-Ascuitto, N.T., 542
Rudolph, A.M., 589

Saunders, D.E., 127
Schiff, D., 161
Schucker, J.L., 389
Shehan, C.L., 3
Soultanakis, H.N., 315
Strauss, A.W., 564
Swyer, P.R., 162

Thalheimer, E., 77

VanBeveren, T.T., 147
Varma, D.R., 164
Veille, J.-C., 250
Vert, P., 161
Vintzileos, A.M., 418

Weisman, L.E., 375
Whitney, J.A., 99
Wilder, D.G., 54
Wiswell, R.A., 213, 232, 263, 315, 340

Yost, H.J., 577

Subject Index

Abdominal segment vibration in pregnancy, 30-37
  frequency-dependent acceleration levels of vibration from abdominal wall to fetal head, 35-37
  frequency response of abdominal contents during, 31-32
  resonance of abdominal segment and, 33-35
Abnormal components of fetal BPP, evaluation of, 420
Abnormal pregnancy, M-mode echocardiography of fetal and maternal cardiovascular response to hand-grip exercise in, 253-254
Abnormalities, *see* Abnormal components; Abnormal pregnancy; Congenital cardiovascular malformations; Genetics of left-right development, heterotaxia and; Genetics of pediatric cardiovascular disease; Neural crest-associated conotruncal defects; Teratogenic effects *and specific conditions*
Abruptio placentae, nicotine and, 154-157
Accelerated development, *see* Preimplantation period, ethanol-enhanced accelerated development in
Acceleration of vibration
  frequency-dependent, from abdominal wall to fetal head, 35-37
  measurement of, 79
Accelerators, WBV measurement with, 85-86
Accessory subunits in ion channels 524
ACGIH (American Conference of Governmental

Author Index

Abrams, R.M., 1, 11, 30
Abran, D., 164
Alexander, J.M., 369
Alpan, G., 186
Anderson, P., 482
Andres, R.L., 91, 93, 154
Arheart, K.L., 426
Armant, D.R., 127
Artal, R., 211, 232, 263, 315, 328, 340
Ascuitto, R.J., 542

Beazley, D., 409
Bendon, R.W., 381
Bovenzi, M., 38
Bowers, P.N., 577
Brueckner, M., 577
Bry, K., 173, 194
Buehler, B.A., 93
Bung, P., 328

Camporesi, E.M., 292
Chao, C.R., 107
Chemtob, S., 164
Clapp, J.F., III, 70
Clark, E.B., 465
Clark, K.E., 115
Conover, B., 93
Cotton, R.B., 206
Cox, S.M., 369
Curtet-Eyal, N.L., 186

Duff, P., 401
Dye, T.D., 334

Eyal, F.G., 186

French, J.I., 344

Gerhardt, K.J., 11, 30
Goldstein, A.N., 520

Hachey, W.E., 186
Hale, R.W., 277
Hallman, M., 173, 194
Hanley, M.L., 418
Huch, R., 303

Iams, J.D., 439
Imseis, H.M., 439

Jaque-Fortunato, S.V., 232, 263, 340
Johnson, M.C., 564

Katz, V.L., 285
Kellum, F.E., 186
Khodiguian, N., 232, 263, 340
Kirby, M.L., 473
Kleinman, C.S., 463
Koppe, J., 161

Lambers, D.S., 115
Landry, S.H., 99
Lapalainen, U., 194
Leatherbury, L., 473
Lewis, R., 409, 451
Li, D.-Y., 164
Lindstrom, D.P., 206
Little, B.B., 147

McGregor, J.A., 344
Magnusson, M., 54
Mahony, L., 510
Mercer, B.M., 343, 389, 426, 451
Merenstein, G.B., 375
Milne, L., 277

Monga, M., 140
Mottola, M.F., 222

Oh, W., 161
Oldenettel, D., 334
Östgaard, H.C., 61

Parker, R.A., 206
Peri, K.G., 164
Pierson, L.J., 21
Pivarnik, J.M., 242
Pope, M.H., 54

Rabinovitch, M., 531
Ross-Ascuitto, N.T., 542
Rudolph, A.M., 589

Saunders, D.E., 127
Schiff, D., 161
Schucker, J.L., 389
Shehan, C.L., 3
Soultanakis, H.N., 315
Strauss, A.W., 564
Swyer, P.R., 162

Thalheimer, E., 77

VanBeveren, T.T., 147
Varma, D.R., 164
Veille, J.-C., 250
Vert, P., 161
Vintzileos, A.M., 418

Weisman, L.E., 375
Whitney, J.A., 99
Wilder, D.G., 54
Wiswell, R.A., 213, 232, 263, 315, 340

Yost, H.J., 577

Subject Index

Abdominal segment vibration in pregnancy, 30-37
  frequency-dependent acceleration levels of vibration from abdominal wall to fetal head, 35-37
  frequency response of abdominal contents during, 31-32
  resonance of abdominal segment and, 33-35
Abnormal components of fetal BPP, evaluation of, 420
Abnormal pregnancy, M-mode echocardiography of fetal and maternal cardiovascular response to hand-grip exercise in, 253-254
Abnormalities, *see* Abnormal components; Abnormal pregnancy; Congenital cardiovascular malformations; Genetics of left-right development, heterotaxia and; Genetics of pediatric cardiovascular disease; Neural crest-associated conotruncal defects; Teratogenic effects *and specific conditions*
Abruptio placentae, nicotine and, 154-157
Accelerated development, *see* Preimplantation period, ethanol-enhanced accelerated development in
Acceleration of vibration
  frequency-dependent, from abdominal wall to fetal head, 35-37
  measurement of, 79
Accelerators, WBV measurement with, 85-86
Accessory subunits in ion channels 524
ACGIH (American Conference of Governmental

Industrial Hygienists), standards and guidelines of, 83-84
Acoustical Society of America (ASA), Directive 38 of, 82-83
Actin in heart development, 486
Active smoking, maternal and fetal physiological effects of passive versus, 123-124
Acyclovir for genital HSV infection, 453
Adaptation(s) to pregnancy
  cardiovascular, aerobic exercise and, 243-244
  to combined stresses of altitude and pregnancy, 307-308
Adenosine monophosphate (AMP), cyclic, effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptor agonists on, 165
Adhesives, as mounts for accelerators measuring WBV, 86
Adrenal suppression, as effect of maternal glucocorticoid therapy of pPROM, 441
Aerobic exercise in pregnancy and postpartum, cardiovascular responses to, 242-249
  cardiac output during, 244-247
  cardiovascular adaptations to pregnancy and, 243-244
  effects of aerobic fitness on hemodynamic responses, 247-248
  suggested target zones for maternal HR in, 229
  see also Aerobic fitness in pregnancy
Aerobic fitness ($\dot{V}O_2$max; maximal oxygen consumption) in pregnancy
  cardiac output during, 244-247
  criteria necessary to achieve true test of, 216-218
  effects of, on hemodynamic responses, 247-248
  effects of prolonged exercise on, 319, 333
  impact of research on guidelines for, 229-230
  measurement of, 214, 217
  see also Physiology of exercise during pregnancy
Afterload, and ventricular function with immature heart, 499-500
Age of children, and married women's labor force participation, 5
Alcohol
  placental transfer of, 147, 149, 150
  see also Embryonic cell exposure to alcohol
Alpha$_1$ (α_1) subunit, and heart development, 489-490
Alternate treatments for midtrimester PROM, 397-398
Altitude, exercise at, in pregnancy, 303-314
  and adaptation to combined stresses of altitude and pregnancy, 307-308
  and geophysics of altitude exposure, 304
  and maternal and fetal effects of short-term altitude exposure at rest and during exercise, 308-312
  neonatal life, reproduction, and pregnancy at altitude and, 306-307
  and physiological responses to altitude, *see* Physiological effect of altitude, relative hypoxemia as
  recommendations and guidelines for, 312-313
Altricial period, critical period of NIHL development in, 22-23
American Conference of Governmental Industrial Hygienists (ACGIH), standards and guidelines of, 83-84
American National Standards Institute (ANSI), guideline 3.313 of, 82-83
Amniocentesis in evaluation of intrauterine infection in pPROM, 411-412
Amniochorion
  impairment of, 347-348
  see also Premature rupture of membranes
Amniotic fluid glucose level, intrauterine infection in pPROM and, 413
Amniotic fluid volume, as component of fetal BPP, assessment of, 423
Amniotic infusion of antibiotics for pPROM, 378, 435
AMP (adenosine monophosphate), cyclic, effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptor agonists on, 165
Amphetamines, placental transfer of, 149-150
Analog tape recorders, WBV measurement with, 88
Anatomy
  maternal changes in, and effects of pregnancy on high-intensity exercise, 278-279
  membrane, PROM and, 385
Angel dust (phencyclidine), placental transfer of, 149-151
ANSI (American National Standards Institute), guideline 3.313 of, 82-83
Antibiotic therapy, *see* Maternal antibiotic therapy of pPROM
Area (or point) of contact of vibration excitor with the body, 34
Arterial-venous O_2 (A-$\dot{V}O_2$) difference in exercising pregnant women, 237
ASA (Acoustical Society of America), Directive 38 of, 82-83
Assessment, *see* Fetal biophysical assessment in pPROM patients; Genetic evaluation; Immunologic evaluation; Initial assessment of PROM patients; Maternal and fetal cardiovascular response to exercise in pregnancy, assessment of; Maternal infection(s) in pPROM, evaluation of; Whole-body vibration measurement *specific conditions and techniques*
Asymmetrically expressed molecular markers, left-right development and, 580-581
Asymptomatic bacteriuria in pPROM, maternal antibiotic therapy of, 427
Atelectasis, severe pulmonary, effects of HPV modulators on response to I-NO in, 186-193
Athletes, *see* Elite athletes, pregnant, high-intensity exercise effects on
Auditory response, fetal, to exogenous sounds, 14-16
A-$\dot{V}O_2$ (arterial-venous O_2) difference in exercising pregnant women, 237

Back pain, *see* Lumbar back pain and posterior pelvic pain in pregnant women; Whole-body vibration exposure, LBP disorders and
Bacterial vaginosis, PROM and, 353-354

Bacteriuria, asymptomatic, in pPROM, maternal antibiotic therapy of, 427
Barbiturates, placental transfer of, 149, 150
Behavioral factors, role of, in PROM, 355-358
Benzodiazepines, placental transfer of, 149, 150
Benzoylmethylecgonine, *see* Cocaine
Beta (β)-hydroxybutyrate, prolonged exercise effects on, 321
Beta (β)-receptors, down-regulation of, as cocaine effect in preimplantation period, 144
Bicycle exercise during normal pregnancy
  Doppler changes in fetal umbilical artery during, 258-259
  M-mode echocardiography of fetal and maternal cardiovascular response to, 251-253
Binding assays of cerebrovascular [^{3}H]PGE_2 and [^{3}H]$PGF_{2\alpha}$, 165
Biochemical pulmonary maturation, maternal glucocorticoid therapy effects on, 439-440
Biology, developmental, *see* Heart development
Biomechanics of LBP in pregnant women, 62
Biophysical monitoring, *see* Fetal biophysical assessment in pPROM patients
Birth, effects of, on ventricular function, 501-504
Birth defects, *see specific conditions*
Birth weight, regular recreational physical activity effects on, 72-73
Bleeding, gestational, PROM and, 358-359
Blood flow
  defective intracardiac, congenital cardiovascular malformations and, 468-469
  see also Blood flow patterns in developing heart, physiological research on; Ductus arteriosus, cell-ECM interactions in, perinatal pulmonary circulation and; Fetal circulation; Umbilical blood flow; Uterine circulation; Uteroplacental circulation and blood flow during exercise
Blood flow patterns in developing heart, physiological research on
  and cardiac chamber development, 591-592
  and cardiovascular development, 590
  and fetal oxygen deprivation, 589-590
  and vascular development, 590-591
Body, human
  coordinating axes of embryonic, and left-right development, 579-580
  point or area of vibration excitor with, 34
Body composition in pregnancy, exercise and, 340-342
Body temperature, *see* Maternal thermal response to high-intensity exercise; Thermoregulation
Bone conduction, sound transmission to fetus via, 16-17
BPD, *see* Bronchopulmonary dysplasia
BPP, *see* Fetal biophysical profile, pPROM and
Brain
  embryonic, ethanol effects on C-myc protein expression in, 135
  vasculature of, effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptors on vasomotor responses of, 165-166
Breast feeding, effects of high-intensity exercise on, 282
Bronchopulmonary dysplasia (BPD)
  genetic susceptibility to, twin study of, 206-209
  see also Pulmonary hypoplasia, PROM and
Buckling structure (or mechanism), effects of seated jolt/vibration exposure on, 57
Bus drivers, *see* Whole-body vibration exposure, LBP disorders and

Calcium (Ca)
  role of, in neural crest-associated conotruncal defects, 475
  see also Calcium in ethanol-induced accelerated development in preimplantation period; Calcium homeostasis, and contractility in developing heart; Sodium/calcium exchanger
Calcium (Ca) in ethanol-induced accelerated development in preimplantation period, 130-132
  and calcium release mechanisms of preimplantation embryos, 131-132
  critical role of intracellular calcium, 130
  ethanol interaction with calcium stores, 130-131
  and signal transduction by calcium, 132
Calcium (Ca) homeostasis, and contractility in developing heart, 510-519
  and Ca transport across sarcolemma, 510-512
  and Ca transport across SR, 512-513
  excitation-contraction coupling and, 513-515
  relaxation and, 515-516
Calibrators, WBV measurement with, 86
cAMP (cyclic adenosine monophosphate), effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptor agonists on, 165
Carbohydrates
  metabolism of, exercise effects on, 227-229
  oxidation of, in intact developing hearts, 550-551
Carbon dioxide (CO_2), production of, during exercise by pregnant, postpartum, and nonpregnant women, 268
Cardiac action potential, as ion channel function, 521-522
Cardiac chamber development, blood flow patterns and, 591-592
Cardiac function
  during exercise, effects of pregnancy on, 232-241
  see also specific aspects of cardiac function
Cardiac lesions, congenital, effects of, on cardiac morphology, 592-593
Cardiac looping
  abnormal, congenital cardiovascular malformations and, 470-471
  embryological manipulations blocking mutations of, 581-582
Cardiac morphology, effects of congenital cardiac lesions on, 592-593
Cardiac myocyte, effects of developmental changes in, on ventricular function, 484-485
Cardiac output (Q), exercise in pregnancy and during aerobic exercise, 244-247
  effects of pregnancy on, 237

measurement of, 214-215
Q response to position changes during, 255-256
Cardiorespiratory changes, maternal, due to high-intensity exercise by non-athletes, 278-279
Cardiovascular disease, *see* Genetics of pediatric cardiovascular disease
Cardiovascular effects of cocaine, 107-114
and in nonpregnant individuals, 108
pharmacological properties of cocaine and, 107-108
see also Maternal cardiovascular effects of cocaine
Cardiovascular effects of exercise in pregnancy, 213
of high-intensity exercise by pregnant athletes on, 279
see also Aerobic exercise in pregnancy and postpartum, cardiovascular responses to; Maternal and fetal cardiovascular response to exercise in pregnancy, assessment of
Cardiovascular malformations, *see* Congenital cardiovascular malformations
Cardiovascular management of neonates with life-threatening neural crest-associated conotruncal defects, 478
Cardiovascular system
blood flow patterns and development of, 590
field defects and, 466-467
see also Heart development; Heart rate *entries beginning with terms*: Cardiac, Cardiorespiratory, Cardiovascular, Intracardiac *and element*: Vascul-
Carotid artery, maternal, Doppler changes in, during exercise in normal pregnancy, 257-258
Catching expected and unexpected loads while seated, mechanical stress of, 57-58
CATCH-22 designation for neural crest-associated conotruncal defects, 476
Catecholamines, cocaine effects on concentrations of, myometrial contractile activity and, 141-143
cDNA (complementary deoxyribonucleic acid) assay of cerebrovascular $PGF_{2\alpha}$ receptors, 166-167
Cell death abnormalities, congenital cardiovascular malformations and, 469
Cell differentiation, normal lung, cytokines with essential role in, 195-197
Cell-ECM interactions, *see* Ductus arteriosus, cell-ECM interactions in, perinatal pulmonary circulation and
Cellular signal transduction, *see* Signal transduction in preimplantation period
Central nervous system, *see* Fetal neurodevelopment
Cerclage, cervical, pPROM and, 453-454
Cerebrovascular prostaglandin E_2 (PGE_2) and prostaglandin $F_2\alpha$ ($PGF_2\alpha$) receptors, regulation and functions of, during development, 164-172
Cervical cerclage, pPROM and, 453-454
Cervical examination, PROM and, 360
Cervical surgery and incompetence, PROM and, 359-360
Cervix
favorable and unfavorable, in term patients with PROM, management and, 403-407
see entries beginning with term: Cervical
CHD, *see* Congenital heart disease, genetics of
Children
age of, and married women's labor force participation, 5
with life-threatening neural crest-associated conotruncal defects, management of, 480
of mothers occupationally noise-exposed during pregnancy, hearing loss in, 26-27
nicotine effects on, 116
see also Genetics of pediatric cardiovascular disease
Chlamydia, PROM and, 351-352
Chondroitin sulfate, and impaired elastin fiber assembly, cell-ECM interactions in ductus arteriosus and, 532-534
Chronic low back pain (LBP), vibration dose, postural load and, 48
CI(s) (confidence intervals) of LBP disorders in drivers, 45-47
Cigarette smoking, *see* Nicotine
Circulation, *see* Blood flow
Classification
of ion channels by structure, 522; *see also* Ion channel structure
see also Classification of congenital cardiovascular malformations
Classification of congenital cardiovascular malformations, 466, 467-471
abnormal situs and looping, 470-471
abnormal targeted growth, 470
cell death abnormalities, 469
ectomesenchymal tissue migration abnormalities, 467-468
extracellular matrix abnormalities, 469-470
intracardiac blood flow defects, 468-469
Cleft palate, as effect of maternal glucocorticoid therapy of pPROM, 440
Clerical workers, common occupational health hazards encountered by, 7
Clinical course of PROM, 369-374
fetal effects of PROM, 370-372
management and, 374
maternal effects of PROM, 372-373
in twin pregnancy, 455
Clinical presentation
of fetal cocaine exposure, 99-100
of lateralization defects, 582-583
see also specific conditions
Clinical trials, *see entries beginning with terms*: Prospective trials
C-myc protein expression in preimplantation period, ethanol exposure and, 132
in developing brain, 135
in neuronal cells, 134
CO_2 (carbon dioxide), production of, during exercise by pregnant, postpartum, and nonpregnant women, 268
Cocaine (benzoylmethylecgonine)
placental transfer of, 148-150
see also Cardiovascular effects of cocaine; Fetal

cocaine exposure, effects of; Myometrial contractile activity, cocaine effect(s) on; Teratogenic effects of cocaine
Codeine, placental transfer of, 148-150
Coitus, PROM and, 356
Combined microbial-host mechanisms of infections in PROM, 354-355
Common occupational health hazards in women's occupation, 7-9; *see also* Vibration exposure in pregnancy
Common sounds, noise levels and effects of, listed, 9
Compartmentation of metabolic energy in developing heart, 558
Complementary deoxyribonucleic acid (cDNA) assay of cerebrovascular $PGF_{2\alpha}$ receptors, 166-167
Components of fetal BPP in pPROM, 419-423
  pPROM effects on, 419-420
  special biophysical, 422-423
Confidence intervals (CIs) of LBP disorders in drivers, 45-47
Congenital cardiac lesions, effects of, on cardiac morphology, 592-593
Congenital cardiovascular malformations, 465-472
  classification of, *see* Classification of congenital cardiovascular malformations
  field defects and, 466-467
  pathogenesis of, 465
  spectrum of, 465-466
Congenital heart disease (CHD), genetics of, 571-574
  cytogenetic abnormalities and, 573-574
  single gene defects and, 571-572
Conotruncal defects, *see* Neural crest-associated conotruncal defects
Contractile activity, *see* Calcium homeostasis, and contractility in developing heart; Uterine contractile activity
Contractile proteins, and heart development, 485-489
Cordocentesis in evaluation of intrauterine infection in pPROM, 412-413
Counseling, genetic, *see* Genetic counseling
Coupling efficiency between exciter, surface, and transducer, vibration of abdominal segment and, 34-35
Course
  of labor, effects of regular recreational exercise on, 74
  see also Clinical course of PROM *and specific conditions*
C-reactive protein, maternal, and intrauterine infection in pPROM, 413
Critical period of NIHL development in altricial animals, 22-23
Cyclic adenosine monophosphate (cAMP), effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptor agonists on, 165
Cytogenetic abnormalities, and CHD, 573-574
Cytokines
  in pPROM, 412
  see also Cytokines, and pulmonary surfactant production
Cytokines, and pulmonary surfactant production, 194-205
  and cytokines with essential roles in normal lung development and cell differentiation, 195-197
  and interaction between surfactant components and cytokines, 200-201
  proinflammatory cytokines, 197-200

DAT (digital audio tape) recorders, WBV measurement with, 88
Db (decibel) scale, 80-81
DCI (maternal decompression illness), *see* Maternal decompression illness
Death
  abnormal cell, congenital cardiovascular malformations and, 469
  see also Mortality, neonatal, PROM and
Decibel (Db) scale, 80-81
Decompression illness, *see* Maternal decompression illness
Delamination of fetal membrane, 346
Delivery
  and LBP, 66
  see also Delivery with PROM; Preterm delivery
Delivery with PROM
  with HSV infection in pPROM, 452
  preterm, 370
Deoxyribonucleic acid, *see* DNA
Development, *see* Embryogenesis; Fetal growth and development; Postimplantation period; Preimplantation period
Dextrocardia with situs solitus (isolated dextrocardia), as lateralization defect, 584
Diabetes mellitus (DM), gestational, exercise and, 328-333
Diagnosis and evaluation, *see* Fetal biophysical assessment in pPROM patients; Genetic evaluation; Immunologic evaluation; Initial assessment of PROM patients; Maternal and fetal cardiovascular response to exercise in pregnancy, assessment of; Maternal infection(s) in pPROM, evaluation of; Whole-body vibration measurement *and specific conditions and techniques*
Differential maternal effects of cocaine use, 109-110
Differentiation
  enzyme, in developing heart, 545-546
  normal lung cell, cytokines with essential role in, 195-197
Digital audio tape (DAT) recorders, WBV measurement with, 88
Direct effects of NO and its metabolic products on pulmonary surfactant, 180-181
Direct placement of accelerators measuring WBV, 86
Diseases, *see* Pathologies
Displacement of vibration, 79
Diving during pregnancy, 292-302
  animal studies on, 295-296
  DCI and, *see* Maternal decompression illness
  effects of, on fetal circulation, 295
  and fetal hyperoxia, 299

human data on, 296-299
physiology of diving and, 293-294
DM (diabetes mellitus), gestational, exercise and, 328-333
DNA (deoxyribonucleic acid)
complementary, assay of cerebrovascular $PGF_{2\alpha}$ receptors with, 166-167
mitochondrial, mutations of, and pediatric cardiomyopathy, 568
Doppler echocardiography of maternal and fetal cardiovascular response to exercise during pregnancy, 254-260
fetal responses, 258-260
maternal responses, 254-258
Dose, WBV, LBP disorders and, 40-44, 47, 48
Down-regulation of beta-receptors, as cocaine effect in preimplantation period, 144
Drivers, professional, *see* Whole-body vibration exposure, LBP disorders and
Drug use, *see* Perinatal substances abuse
Ductus arteriosus, cell-ECM interactions in, perinatal pulmonary circulation and, 531-541
changes in vasoactive mediators and, 537
chondroitin sulfate and impaired elastin fiber assembly and, 532-534
ECM and plasticity of pulmonary vasculature, 538
elastin peptides, smooth muscle cell migration, fibronectin and, 534
hyaluronan and ductus smooth muscle cell upward migration, 535
molecular mechanisms regulating fibronectin and, 535-536
pulmonary vascular pathologies and, *see* Pulmonary vascular pathologies
TGF-β and hyaluronan in subendothelium and, 531-532
Dysplasia, *see* Bronchopulmonary dysplasia

Ear, fetal inner, model of sound transmission to, 18-19
Early pregnancy events, effects of regular recreational physical activity on, 72
Echocardiography, *see* Ultrasound
ECM, *see* Extracellular matrix
Economic factors, role of, in women's labor force participation, 4-5
Ectomesenchymal tissue migration abnormalities, congenital cardiovascular malformations and, 467-468
EEC (European Economic Community; European Union), directives 89/392 and 91/968 of, for new machinery, 84
EGF (epidermal growth factor), role of, in normal lung development and cell differentiation, 195-196
Elastin fiber assembly, cell-ECM interactions in ductus arteriosus and impaired, 532-534
Elastin peptides, ductus smooth muscle cell migration, fibronectin and, 534
Electronics technicians, common health hazards encountered by, 7
Elite athletes, pregnant, high-intensity exercise effects on, 277-284
and on fetus, 281-282
and on nonathletes, 278-279
Embolization, fetal, effects of maternal diving on fetal circulation and, 295
Embryogenesis
teratogenic potential of cocaine during 93
see also Embryonic cell exposure to alcohol
Embryonic body axes, coordinating, and left-right development, 579-580
Embryonic cell exposure to alcohol, 127-139
conclusions on, 135-136
effects of, on neuronal development, 133-135
and maternal reproductive tract response to alcohol, 129
in postimplantation period, 129-130
in preimplantation period, *see* Preimplantation period, ethanol-enhanced accelerated development in
teratogenic effects of, 127-128
Embryonic manipulations of left-right development, 579-582
Embryonic neuronal development, ethanol effects on, 133-135
End-diastolic volume (preload), ventricular function with immature heart and, 496-499
Energy-producing genes, diseases of myocardial, and pediatric cardiomyopathy, 567-568
Enzyme differentiation in developing heart, 545-546
Epidemic, effects of recent cocaine use, on fetal development, 99
Epidemiology
of LBP in pregnant women, 61-62
of mechanical stress during seated jolt/vibration exposure, 54-55
see also Incidence; Prevalence *and specific conditions*
Epidermal growth factor (EGF), role of, in normal lung development and cell differentiation, 195-196
Ethanol, *see* Alcohol
Etiology
of LBP in pregnant women, 67
of mechanical stress during seated jolt/vibration exposure, 55-56
of midtrimester PROM, 389
see also specific conditions
European Union (EU; EEC; European Economic Community), directives 89/392 and 91/968 of, for new machinery, 84
Evaluation, *see* Fetal biophysical assessment in pPROM patients; Genetic evaluation; Immunologic evaluation; Initial assessment of PROM patients; Maternal and fetal cardiovascular response to exercise, assessment of; Maternal infection(s) in pPROM, evaluation of; Whole-body vibration measurement *and specific conditions and techniques*
Excitation-contraction coupling, and myocardial contractility in developing heart, 513-515
Exciter, coupling efficiency between surface,

transducer and, vibration of abdominal segment and, 34-35
Exercise in pregnancy
and body composition in pregnancy and, 340-342
cardiac function during, pregnancy effects on, 232-241; *see also specific aspects of cardiac function*
GDM and, 328-333
introduction to, 211-212
see also Aerobic exercise in pregnancy and postpartum, cardiovascular responses to; Altitude, exercise at, in pregnancy; Elite athletes, pregnant, high-intensity exercise effects on; Maternal and fetal cardiovascular response to exercise in pregnancy, assessment of; Physical activity during pregnancy, pregnancy outcome and; Physiology of exercise during pregnancy; Prolonged exercise, effects of, in pregnancy; Research on exercise effects during pregnancy; Ventilatory responses to exercise by pregnant, postpartum, and nonpregnant women; Water exercise in pregnancy
Exogenous sounds, fetal auditory response to, 14-16
Expected loads, catching unexpected and, while seated, mechanical stress of, 57-58
Exposure, *see* Altitude, exercise at, in pregnancy; Vibration exposure in pregnancy
Extracellular matrix (ECM)
congenital cardiovascular malformations and abnormalities of, 469-470
dysregulation of, and pulmonary vascular pathologies, 538-539
genetic defects of, vasculopathies and, 565-566
plasticity of pulmonary vasculature and, 538
see also Ductus arteriosus, cell-ECM interactions in, perinatal pulmonary circulation and

FAS (fetal alcohol syndrome), *see* Alcohol
Fatty acid(s)
free, prolonged exercise effects on, 321
see also Fatty acid oxidation
Fatty acid oxidation
disorders of, and pediatric vasculopathies, 568-569
in intact developing hearts, 552
Favorable cervix, term patients with, management of PROM in, 402-403
Federal Transit Administration (FTA), standards and guidelines of, 84-85
Female dominated jobs (1993), 6
Femoral artery, maternal, Doppler changes in, during exercise in normal pregnancy, 257-258
Fetal alcohol syndrome, *see* Alcohol
Fetal auditory response to exogenous sounds, 14-16
Fetal biophysical assessment in pPROM patients, 418-425
fetal BBP and, *see* Fetal biophysical profile, pPROM and
management of pPROM with fetal biophysical assessment, 423-424
Fetal biophysical profile (BPP), pPROM and, 418-423
components of, *see* Components of fetal BPP in pPROM
monitoring, 418-419
relationship between pPROM, infection and, 420-422
Fetal cardiovascular effects, *see* Maternal and fetal cardiovascular response to exercise in pregnancy, assessment of
Fetal circulation
cocaine effects on, 110-112
effects of diving on, embolization and, 295
Fetal cocaine exposure, effects of
on fetal circulation, 110-112
see also Fetal cocaine exposure, effects of, on development
Fetal cocaine exposure, effects of, on development, 99-106
presentation and prevalence of, 99-100
recent cocaine use epidemic and, 99
research on, *see* Research on fetal cocaine exposure effects
Fetal effects
of maternal glucocorticoid therapy of pPROM, 439-442
of PROM, clinical course and, 370-372
see also Fetal cocaine exposure, effects of; Fetal effects of exercise; Fetal growth and development, effects on; Nicotine, maternal and fetal physiological effects of; Noise-induced hearing loss, fetal; Placental transfer of substances of abuse
Fetal effects of exercise
of high-intensity exercise by maternal athletes, 281-282
of short-term altitude exposure at rest and during exercise, 308-312
see also Fetal effects of recreational physical activity; Maternal and fetal cardiovascular response to exercise in pregnancy, assessment of
Fetal effects of recreational physical activity, 72-74
of fetoplacental growth, 72-73
on neurodevelopment, 73-74
Fetal embolization, effects of maternal diving on fetal circulation and, 295
Fetal growth and development
cerebrovascular PGE_2 and $PGF_2\alpha$ receptors during, regulation and functions of, 164-172
see also Fetal growth and development, effects on; Fetal neurodevelopment; Fetoplacental growth; Heart development; Lung development
Fetal growth and development, effects on
of exercise, 223-229
of maternal glucocorticoid therapy of pPROM, 440-441
of nicotine, 121-123; *see also* Nicotine, maternal and fetal physiological effects of
see also Fetal cocaine exposure, effects of, on development

Fetal head, sound transmission to, 11-12
  frequency-dependent acceleration levels of vibration from abdominal wall to fetal head, 35-37
Fetal hearing, 11-20
  and NIHL, *see* Noise-induced hearing loss, fetal
  and recognition of speech sounds recorded in uterus, 12-14
  and sound transmission, *see* Sound transmission to fetus
  and speech detection by fetus, 17-18
Fetal heart, *see* Heart development
Fetal heart rate (FHR), effects of high-intensity exercise on, 282
Fetal hemodynamic response to exercise, 259-260
Fetal hyperoxia, maternal diving and, 299
Fetal inner ear, model of sound transmission into, 18-19
Fetal membrane, form and function of, 344-348
  amniochorion impairment and, 347-348
  delamination, stress hardening, and thinning of membrane, 346-347
  and focal membrane impairment, 347
  membrane strength and, 346
  see also Premature rupture of membranes
Fetal neural crest-associated conotruncal defects, counseling parents of fetus with, 476-478
Fetal neurodevelopment
  effects of maternal glucocorticoid therapy of pPROM on, 441
  and PROM-related prematurity, 376
  regular recreational physical activity effects on, 73-74
Fetal oxygen (O_2), blood flow patterns and deprivation of, 589-590
Fetal respiratory system
  nicotine effects on, 122-123
  see also Lung development
Fetal surgery, role of physiological research in, 593-594
Fetal survival, midtrimester PROM and, 392
Fetal thermoregulation, exercise effects on, 225-227
Fetal umbilical artery, Doppler changes in, during bicycle exercise in normal pregnancy, 258-259
Fetal weight
  effects of high-intensity exercise by maternal athletes on, 282
  see also Fetal growth and development
Fetoplacental growth
  regular recreational physical activity effects on, 72-73
  see also Fetal growth and development
FFAs (free fatty acids), prolonged exercise effects on, 321
FHR (fetal heart rate), effects of high-intensity exercise on, 282
Fibronectin, cell-ECM interactions in ductus arteriosus and, 534-536
  elastin peptides, smooth muscle cell migration and, 534
  molecular mechanisms regulating fibronectin, 535-536
Field defects, and cardiovascular system, 466-467
Focal fetal membrane, impairment of, 347
Free fatty acids (FFAs), prolonged exercise effects on, 321
Frequency
  frequency-dependent acceleration levels of vibration from abdominal wall to fetal head, 35-37
  frequency response of abdominal contents to vibration in pregnancy, 31-32
  natural vibration, *see* Resonance
"Frequency analysis" of vibration, 81-82
FTA (Federal Transit Administration), standards and guidelines of, 84-85
Functional change, neural crest ablation and, 474-475

GAP43 (growth-associated protein 43), ethanol effects on, 135
Gating, as ion channel function, 520-524
  ion channel structure and, 522-524
GBS infection, *see* Group B streptococcus infection
GDM (gestational diabetes mellitus), exercise and, 328-333
Gender labeling of jobs, occupational distribution of women workers and, 6-7
Genes
  diseases of myocardial energy-producing, pediatric cardiomyopathy and, 567-568
  encoding ion channels, 522
  see also entries beginning with term: Genetics
Genetic counseling
  for parents with fetuses and/or neonates with neural crest-associated conotruncal defects, 476-478
  of patient with midtrimester PROM, 396-397
Genetic evaluation of neonates with life-threatening neural crest-associated conotruncal defects, 478-479
Genetic susceptibility to BPD, 206-209
Genetics of left-right development, heterotaxia and, 577-588
  biological aspects of left-right development, 577-579
  clinical aspects of defective, *see* Lateralization defect(s)
  embryonic manipulations of left-right development, 579-582
  mouse models of heterotaxia, 582-583
  overview of left-right development, 577
Genetics of pediatric cardiovascular disease, 564-576
  of cardiomyopathy, 566-569
  of CHD, *see* Congenital heart disease, genetics of
  gene ablation models as clues to, 569-571
  of vasculopathies, 565-566
Genital herpes simplex virus (HSV) infection, PROM and, 451-453
Genital mycoplasmas, PROM and, 351
Geophysics of altitude exposure, 304
Gestational bleeding, PROM and, 358-359
Gestational diabetes mellitus (GDM), exercise and, 328-333

Glucocorticoid therapy, *see* Maternal glucocorticoid therapy for pulmonary maturity induction in pPROM
Glucose
  amniotic fluid level of, intrauterine infection in pPROM and, 413
  see also Glucose, and exercise in pregnancy
Glucose, and exercise in pregnancy
  levels of, before and after high-intensity exercise by pregnant athletes, 280
  prolonged exercise effects on, 319-320, 323-326
Glycolysis in intact developing hearts, 549-550, 553
Gonorrhea, PROM and, 351
Group B streptococcus (GBS) infection
  maternal antibiotic therapy of, to prevent pPROM, 427-428
  PROM due to, 353
Growth-associated protein 43 (GAP43), ethanol effects on, 135
Growth and development, *see* Embryogenesis; Fetal growth and development; Postimplantation period; Preimplantation period
Guidelines
  for aerobic fitness in pregnancy, impact of research on guidelines for, 229-230
  for exercise at altitude in pregnancy, 312-313
  setting limits to vibration exposure, 82-85

Hand-grip exercise during abnormal pregnancy, M-mode echocardiography of fetal and maternal cardiovascular response to, 253-254
Hardening, stress, of fetal membrane, 346-347
Head, *see* Fetal head, sound transmission to
Health, occupational, history of, 77-78
Health care laboratory workers, common occupational health hazards encountered by, 7
Health hazards
  common, in women's occupation, 7-9
  see also Vibration exposure in pregnancy
Hearing, *see* Fetal hearing
Hearing loss, *see* Noise-induced hearing loss, fetal
Heart, *see* Heart development; Heart rate *and entries beginning with terms*: Cardiac, Cardiovascular
Heart development
  introduction to, 463-464
  see also Calcium homeostasis, and contractility in developing heart; Congenital cardiovascular malformations; Ductus arteriosus, cell-ECM interactions in, perinatal pulmonary circulation and; Genetics of left-right development, heterotaxia and; Genetics of pediatric cardiovascular disease; Heart development effects on ventricular function; Ion channel(s); Neural crest-associated conotruncal defects; Physiological research on developing heart; Substrate metabolism in developing heart
Heart development effects on ventricular function, 482-509
  contractile proteins and, 485-489
  effects of birth, 501-504
  effects of developmental changes in cardiac myocyte and myofibrillar structure, 484-485
  immature heart and, *see* Immature heart, ventricular function and
  membrane proteins and, 489-492
  myocardial compliance and, 492-494
  ventricular interaction and, 500-501
Heart disease
  and contractile protein expression, 488-489
  see also Congenital heart disease, genetics of
Heart rate (HR)
  fetal, effects of high-intensity exercise on, 282
  and ventricular function with immature heart, 495
  see also Maternal heart rate, and exercise in pregnancy
Hematological system, and exercise in pregnancy
  effects of high-intensity exercise by athletes on, 279-280
  measuring variables of, 213
Hemodynamic response to exercise in pregnancy
  fetal, 259-260
  and postpartum, aerobic fitness effects on, 247-248
  see also Blood flow; Heart rate
Heroin, placental transfer of, 148-150
Herpes simplex virus (HSV), genital, PROM and, 451-453
Heterogeneity of ion channels, 525
Heterotaxia, *see* Genetics of left-right development, heterotaxia and
High-intensity exercise, *see* Elite athletes, pregnant, high-intensity exercise effects on
Histopathology of PROM, 381-388
  and inflammation as cause of PROM, 384-385
  membrane anatomy and, 385
  membrane mechanics and, 382-383
  weakened membrane hypothesis and, 383-384
History of occupational health, 77-78
Home management of pPROM, inpatient versus, 457-459
Homeostasis, calcium, *see* Calcium homeostasis, and contractility in developing heart
Hormones
  prolonged exercise effects on, in pregnancy, 319-320
  see also specific hormones
Hospital workers, common occupational health hazards encountered by, 7
HPV (hypoxic pulmonary vasoconstriction), effects of modulators of, on response to I-NO in severe pulmonary atelectasis, 186-193
HR, *see* Heart rate
HSV (herpes simplex virus), genital, PROM and, 451-453
Human body, *see* Body, human
Hyaluronan
  and ductus smooth muscle cell upward migration, 535
  in subendothelium and, cell-ECM interactions in ductus arteriosus and, 531-532
  β (beta)-Hydroxybutyrate, prolonged exercise effects on, 321

Hyperoxia, fetal, maternal diving and, 299
Hypoplasia, *see* Pulmonary hypoplasia, PROM and
Hypoxemia, *see* Physiological effect(s) of altitude, relative hypoxemia as
Hypoxia, substrate metabolism in developing heart in, 556-557
Hypoxic pulmonary vasoconstriction (HPV), effects of modulators of, on response to I-NO in severe pulmonary atelectasis, 186-193

IFN-γ (interferon-γ), role of, in normal lung development and cell differentiation, 198-199
IL-1 (interleukin-1), role of, in normal lung development and cell differentiation,
Illicit drug abuse, *see* Perinatal substances abuse
Immature heart, ventricular function and, 494-500
  afterload, 499-500
  end-diastolic volume, 496-499
  heart rate, 495
  inotropy, 500
Immersion, physiological effects of, 285-287
Immunologic evaluation of neonates with life-threatening neural crest-associated conotruncal defects, 479-480
Immunosuppression, as effect of maternal glucocorticoid therapy of pPROM, 441-442
Incidence
  of pPROM with twin gestation, 454-455
  see also Prevalence *and specific conditions*
Incompetence, cervical, PROM and, 359-360
Indirect effects of NO on pulmonary surfactants, 177
Infants, *see* Preterm infants, PROM and *and entries beginning with terms*: Neonatal, Perinatal
Infections, *see* Maternal infection(s) in PROM; Neonatal infection(s), PROM and
Inflammation, as cause of PROM, 384-385
Inhaled nitric oxide (I-NO)
  in severe pulmonary atelectasis, effects of HPV modulators on, 186-193
  see also Inhaled nitric oxide, pulmonary surfactants and
Inhaled nitric oxide (I-NO), pulmonary surfactants and
  mechanism of I-NO-induced surfactant increase by proteins, 178-180
  methods to detect effects of, 175-176
  properties of, in general, 173-174
  surfactants following, 177-178
Initial assessment of PROM patients
  of cervix in term patients with PROM, 402
  with midtrimester PROM, 396
Initial research phase on effects of fetal cocaine exposure, 100
Inner ear, fetal, model of sound transmission into, 18-19
I-NO, *see* Inhaled nitric oxide
Inositol 1,4,5-triphosphate (IP_3), effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptor agonists on, 165
Inotropy, and ventricular function with immature heart, 500
Inpatient management of pPROM, home management versus, 457-459
Insulin, prolonged exercise effects on, 321
Intact developing hearts, 547-553
  carbohydrate oxidation in, 550-551
  fatty acid oxidation in, 552
  glycolysis in, 549-550, 553
  models of myocardial metabolism in, 547-548
  oxygen consumption in, 550, 551
Inter-amniotic membrane rupture in twin pregnancy, 455-456
Interferon-γ (IFN-γ), role of, in normal lung development and cell differentiation, 198-199
Interleukin-1 (IL-1), role of, in normal lung development and cell differentiation, 199-200
International Perinatal Collegium, historical overview of, 162-163
International Standards Organization (ISO), Standard 2631 of, 82-83
Intra-amniotic infection in pPROM, maternal antibiotic therapy of, 435-436
Intracardiac blood flow defects, congenital cardiovascular malformations and, 468-469
Intracellular calcium (Ca), role of ethanol-induced accelerated development in preimplantation period and, 130
Intrauterine infection in pPROM, evaluation of, 410-413
Ion channel(s), 520-530
  classification of, by structure, 522; *see also* Ion channel structure
  function of, *see* Ion channel function
  genes encoding, cloning of, 522
  heterogeneity of, 525
Ion channel function, 525-528
  cardiac action potential as, 521-522
  disease and, 526-528
  regulation of, 525-526
  see also Gating, as ion channel function; Ion selectivity, as ion channel function
Ion channel structure, 522-525
  gating and, 522-524
  ion channel classification by, 522
  ion selectivity and, 524-525
Ion selectivity, as ion channel function, 520-521
  ion channel structure and, 524-525
IP_3 (inositol 1,4,5-triphosphate), effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptor agonists on, 165
Ischemia, substrate metabolism in developing heart in, 553-556
ISO (International Standards Organization), Standard 2631 of, 82-83
Isolated dextrocardia (dextrocardia with situs solitus), as lateralization defect, 584
Isolated levocardia (levocardia with situs inversus), as lateralization defect, 584-585
Isolated myometrial contractile activity, cocaine effects on, 141
Isomerism, left and right, as lateralization defects, 585

Jobs, gender labeling of, and occupational distribution of women workers, 6-7

Jolt/vibration exposure, *see* Seated jolt/vibration exposure, mechanical stress during

Kartagener's syndrome, as lateralization defect, 583-584

Labor
  course of, effects of regular recreational exercise on, 74
  effects of high-intensity exercise by athletes on, 281
  preterm, *see* Preterm labor
Labor force participation, women's, 3-6
  economic factors and, 4-5
  in the military, 5-7
  revolution in, 3-4
Laboratory based whole-body analyzers, 87-88
Laboratory workers, health care, common occupational health hazards encountered by, 7
Lactate, plasma, during exercise by pregnant, postpartum, and nonpregnant women, 270, 271
Late pregnancy events, effects of regular recreational physical activity on, 72, 73
Latency, and maternal antibiotic therapy of pPROM, 377-378, 432
Lateralization defect(s), 583-586
  clinical presentation of, 582-583
  isolated dextrocardia as, 584
  isolated levocardia as, 584-585
  Kartagener's syndrome as, 583-584
  left and right isomerism as, 585
  prognosis of, 585-586
  situs inversus as, *see* Situs inversus, as lateralization defect
LBP (low back pain), *see* Lumbar back pain and posterior pelvic pain in pregnant women; Whole-body vibration exposure, LBP disorders and
Left isomerism, as lateralization defect, 585
Left-right development, *see* Genetics of left-right development, heterotaxia and
Lesions, congenital cardiac, effects of, on cardiac morphology, 592-593
Leukocytosis, maternal, and intrauterine infection in pPROM, 413
Levocardia with situs inversus (isolated levocardia), as lateralization defect, 584-585
Limits to vibration exposure, guidelines and standards setting, 82-85
Loads
  catching expected and unexpected, while seated, mechanical stress of, 57-58
  postural, and WBV exposure, LBP disorders and, 40, 43-44, 47, 48
Longitudinal research on cocaine effects on fetal development, 102-103
Looping, *see* Cardiac looping
Loss of hearing, *see* Noise-induced hearing loss, fetal
Low back pain disorders, *see* Lumbar back pain and posterior pelvic pain in pregnant women; Whole-body vibration exposure, LBP disorders and
Lower genital infection in pPROM, evaluation of, 409-410
LSD (lysergic acid diethylamide), placental transfer of, 148-149
Lumbar back pain and posterior pelvic pain in pregnant women, 61-68
  biomechanics of, and background to, 62
  conclusions on, 68
  defined, 62-63
  delivery and, 66
  development of, 65
  epidemiology of, 61-62
  etiology of, 67
  occupation and, 65
  posterior pelvic pain provocation test for, 63-65
  postpartum, 67
  timing of next pregnancy and, 67
  treatment of, *see* Therapy and management of LBP in pregnant women
Lung(s), *see* Lung development *and entries beginning with terms*: Bronchopulmonary, Pulmonary
Lung development
  normal, with normal cell differentiation, cytokines with essential role in, 195-197
  in PROM, *see* Pulmonary hypoplasia, PROM and; Pulmonary maturation in pPROM
Lysergic acid diethylamide (LSD), placental transfer of, 148-149

Machinery, new, European Union directives for, 84
Magnitude of vibration, measurement of, 80
Malformations, *see* Teratogenic effects
Management, *see* Therapy and management *and specific conditions*
Marijuana, placental transfer of, 149, 150
Married women's labor force participation, and children's age, 5
Mass
  relationship between natural frequency increase and decrease in, 34
  seated, vibration at resonance in, 57
Maternal anatomic changes in pregnancy, and effects of pregnancy on high intensity-exercise, 278-279
Maternal antibiotic therapy of pPROM, 377-378, 426-438
  preventive, 427-429
  prospective trials of, *see* Prospective trials of maternal antibiotic therapy of pPROM
  summary on, 436
Maternal behavioral factors, role of, in PROM, 355-358
Maternal cardiorespiratory changes due to high-intensity exercise by nonathletes, 279
Maternal cardiovascular effect(s)
  of PROM with intrauterine infections, tachycardia as, 413
  see also Cardiovascular effects of exercise in pregnancy; Maternal cardiovascular effects of cocaine

Maternal cardiovascular effects of cocaine, 108-112
differential, 109-110
pharmacological properties and, 107-108
on uterine circulation, 110-112
see also Myometrial contractile activity, cocaine effect(s) on
Maternal carotid artery, Doppler changes in, during exercise in normal pregnancy, 257-258
Maternal C-reactive protein, and intrauterine infection in pPROM, 413
Maternal decompression illness (DCI)
pathophysiology of, 294-295
therapy of, 299-300
Maternal effects
of PROM, clinical course and, 372-373; *see also* Premature rupture of membranes
see also Exercise in pregnancy; Perinatal substances abuse; Vibration exposure in pregnancy
Maternal femoral artery, Doppler changes in, during exercise in normal pregnancy, 257-258
Maternal and fetal cardiovascular response to exercise in pregnancy, assessment of, 250-262
with Doppler echocardiography, *see* Doppler echocardiography of maternal and fetal cardiovascular response to exercise during pregnancy
with M-mode echocardiography, 250-254
Maternal glucocorticoid therapy for pulmonary maturity induction in pPROM, 378, 439-450
adverse effects of, 440-442
beneficial effects of, 439-440
effects of, on pulmonary maturity, 445
prospective trials of, *see* Prospective trials of maternal glucocorticoid therapy of pPROM
Maternal heart rate (HR), and exercise in pregnancy
effects of prolonged exercise on, 319, 322
measurement of, 215-216
and pregnancy effects on HR, 234-235
suggested target zones for, in aerobic exercise, 229
Maternal infection(s) in pPROM
glucocorticoid therapy effects on, 447
relationship between pPROM, fetal BPP and, 420-422
suspected intra-amniotic, antibiotic therapy of, 435-436
see also Maternal infection(s) in pPROM, evaluation of
Maternal infection(s) in pPROM, evaluation of, 409-413
intrauterine, 410-413
lower genital, 409-410
see also Maternal antibiotic therapy of pPROM
Maternal infection(s) in PROM, 348-355
bacterial vaginosis as, 353-354
chlamydia as, 351-352
combined microbial-host mechanisms of, 354-355
genital HSV as, 451-453
genital mycoplasmas and gonorrhea as, 351
group B streptococcus, *see* Group B streptococcus infection
management of, 352; *see also* Maternal antibiotic therapy of pPROM
microorganisms responsible for, *see* Microorganisms responsible for infection-mediated PROM
trichomoniasis as, 352-353
see also Maternal infection(s) in pPROM
Maternal interventions
to decrease neonatal consequences of PROM, 377-378
see also specific types of interventions; for example: Maternal antibiotic therapy of pPROM
Maternal leukocytosis, and intrauterine infection in pPROM, 413
Maternal mitral valve, Doppler changes across, during exercise in normal pregnancy, 254-255
Maternal morbidity
with midtrimester PROM, 391
in prospective trials of maternal antibiotic therapy of pPROM, 432-433
see also specific conditions
Maternal peripheral vasculature, Doppler changes in, during exercise in normal pregnancy, 256-258
Maternal pyrexia, and intrauterine infection in pPROM, 413
Maternal reproductive tract, alcohol effects on, 129
Maternal substances abuse, *see* Perinatal substances abuse
Maternal tachycardia, and intrauterine infection in pPROM, 413
Maternal thermal response to exercise
to high-intensity exercise by athletes, 280-281
to prolonged exercise, 321-322
Maximal oxygen consumption, *see* Aerobic fitness in pregnancy
Mechanical efficiency, measurement of, during exercise in pregnancy, 218-219
Mechanical stress, *see* Seated jolt/vibration exposure, mechanical stress during
Mechanical vibration of abdominal segment, *see* Vibration exposure in pregnancy
Mechanics
biomechanics of LBP in pregnant women, 62
membrane, PROM and, 382-383
Membrane proteins, and heart development, 489-492
Membrane rupture, *see* Premature rupture of membranes
Mescaline, placental transfer of, 149-150
Messenger ribonucleic acid (mRNA), effects of changes in cerebrovascular $PGF_{2\alpha}$ receptors on, 166-168
Metabolic products of NO, direct effects of NO and, on pulmonary surfactants, 180-181
Metabolism, *see* Metabolism, exercise effects on, during pregnancy; Substrate metabolism in developing heart
Metabolism, exercise effects on, during pregnancy, 213-214

on carbohydrate metabolism, 227-229
of high-intensity exercise by athletes, 280
and by postpartum and nonpregnant women, 267-269
Meteorological risk factors for PROM, 362
Methadone, placental transfer of, 149, 150
Methamphetamine, placental transfer of, 149-151
Methemoglobin, binding of, to pulmonary surfactants, 179
Microfibrillar proteins, genetic defects of, vasculopathies and, 565-566
Microorganisms responsible for infection-mediated PROM
listed, 350
in pPROM, 410, 427
see also specific infections
Middle research phase on effects of fetal cocaine exposure, 100-103
Midtrimester premature rupture of membranes (PROM), 389-400
etiology of, 389
management of, 396-398, 457
maternal morbidity with, 391
perinatal morbidity and mortality with, 392-397
pregnancy outcome with, 389-390
Migration, smooth muscle cell, *see* Smooth muscle cell migration, cell-ECM interactions and ductus
Military, the, women's participation in, 5-7
Mitochondria
morphology and function of, substrate metabolism in developing heart and, 546-547
see also entries beginning with term: Mitochondrial
Mitochondrial DNA (deoxyribonucleic acid), mutations of, and pediatric cardiomyopathy, 568
Mitochondrial protein, deficiencies of, and pediatric cardiomyopathy, 568
Mitral valve, maternal, Doppler changes across, during exercise in normal pregnancy, 254-255
M-mode echocardiography of fetal and maternal cardiovascular response to exercise in pregnancy, 250-254
Molecular markers, asymmetrically expressed, left-right development and, 580-581
Molecular mechanisms regulating fibronectin, cell-ECM interactions in ductus arteriosus and, 535-536
Morbidity, *see* Maternal morbidity; Neonatal morbidity with PROM *and specific conditions*
Morphine, placental transfer of, 149-151
Morphology
cardiac, effects of congenital cardiac lesions on, 592-593
mitochondrial function and, substrate metabolism in developing heart and, 546-547
Mortality, neonatal, PROM and
effects of maternal glucocorticoid therapy of pPROM on rate of, 446
with midtrimester PROM, 392-397
Mouse models
of heterotaxia, 582-583
of neural crest-associated conotruncal defects, 475
Mounting techniques for accelerators measuring WBV, 86
mRNA (messenger ribonucleic acid), effects of changes in cerebrovascular $PGF_{2\alpha}$ receptors on, 166-168
Mutations
blocking cardiac looping, 581-582
see also Protein mutations, and cardiomyopathy
Mycoplasmas, genital, PROM and, 351
Myocardial compliance, effects of heart development on, 492-494
Myocardial contractility, *see* Calcium homeostasis, and contractility in developing heart
Myocardial energy-producing genes, diseases of, and pediatric cardiomyopathy, 567-568
Myocardial metabolism
in intact hearts, 547-548
in states of oxygen insufficiency, 552-553
substrates and, 548-549
Myocardial protein, structural, mutations of, and pediatric cardiomyopathy, 567
Myocyte, cardiac, effects of developmental changes in, on ventricular function, 484-485
Myofibrillar structure, effects of developmental changes in, on ventricular function, 484-485
Myometrial contractile activity, cocaine effect(s) on, 140-146
on cellular signal transduction, 144-145
in chronically instrumented animals, 140-141
down-regulation of beta-receptors as, 144
effects of, on catecholamines, 141-143
isolated, 141
vascular effects of cocaine, 143-144
Myosin, heart development and, 485

Na/Ca (sodium/calcium) exchanger, and heart development, 490
Natural history of pPROM, 370
Natural vibration frequency, *see* Resonance
Neonatal complications
associated with nicotine, 116
see also Neonatal consequence(s) of PROM *and specific conditions*
Neonatal consequence(s) of PROM, 375-380
infection as, *see* Neonatal infection(s), PROM and
maternal interventions to decrease, 377-378; *see also specific types of interventions*
prematurity as, 375-376; *see also entries beginning with term*: Preterm
pulmonary hypoplasia as, *see* Pulmonary hypoplasia, PROM and; Pulmonary maturation in pPROM
restrictive deformations as, 377
Neonatal infection(s), PROM and, 376-377
and maternal glucocorticoid therapy of pPROM, 446
risk for HSV infection, 451-452
Neonatal life at high altitude, 306-307
Neonatal morbidity with PROM
with midtrimester PROM, 392-397

in prospective trials of maternal antibiotic therapy of pPROM, 433-434
Neonatal mortality, *see* Mortality, neonatal, PROM and
Neonatal neural crest-associated conotruncal defects, 476-480
life-threatening defects, management of, 478-480
parental counseling for, 476-478
Neonatal pulmonary circulation, *see* Ductus arteriosus, cell-ECM interactions in, perinatal pulmonary circulation and
Neonatal survival, PROM and
with midtrimester PROM, 392
PROM-related prematurity and, 376
in prospective trials of maternal antibiotic therapy of pPROM, 434
Neonates, *see* Preterm infants, PROM and *and entries beginning with terms*: Neonatal, Perinatal
Neural crest ablation model, 474-476
in chick embryos, 474-475
clinical syndromes in, 475-476
Neural crest-associated conotruncal defects, 473-481
CATCH-22 designation for, 476
counseling parents of fetuses and/or neonates with, 476-478
described, 473-474
management of neonates and children with, 478-480
mouse models of, 475
neural crest ablation model of, *see* Neural crest ablation model
Neurodevelopment, *see* Fetal neurodevelopment
Neuronal cells, C-myc protein expression in preimplantation period, ethanol exposure and, 134
Neuronal development, embryonic, alcohol effects on, 133-135
New machinery, European Union directives 89/392 and 91/968 for, 84
Next pregnancy, LBP and timing of, 67
Nicotine, 154-159
abruptio placentae and, 154-157
placenta previa and, 157-158
placental transfer of, 149-151
see also Nicotine, maternal and fetal physiological effects of
Nicotine, maternal and fetal physiological effects of, 115-126
on fetal growth, 121-123
of fetal respiratory system, 122-123
of passive versus active smoking, 123-124
pharmacodynamics of nicotine and, 116-117
pharmacokinetics of nicotine and, 116
on pregnancy outcome, 117-118
summary on, 124-125
on uterine and umbilical blood flow, 118-121
NIHL, *see* Noise-induced hearing loss, fetal
Nitric oxide (NO), pulmonary surfactants and, 173-185
inhaled, *see* Inhaled nitric oxide
NO properties, 173-174
NO reactivity and, 174-175
NO-surfactant interactions, 176-181
synthesis and fate of NO in lungs, 175
NO, *see* Nitric oxide, pulmonary surfactants and
Noise
exposure to, in pregnancy, *see* Vibration exposure in pregnancy
levels of, and effects of common sounds, 9
see also Noise-induced hearing loss, fetal
Noise-induced hearing loss (NIHL), fetal, 21-29
characteristics of, 21-22
critical period of development of, in altricial animals, 22-23
evidence of, in precocial animals, 23-26
and hearing loss in children of mothers occupationally noise-exposed during pregnancy, 26-27
Nonathletes, pregnant, effects of high-intensity exercise on, 278-279
Nonpregnant women
cardiovascular effects of cocaine on, 108
HR of exercising, 234-235; *see also* Ventilatory responses by pregnant, postpartum, and nonpregnant women
Nonpresenting sac, membrane rupture of, in twin pregnancy, 455
Nonstress test (NST), 422-423
Normal components of fetal BPP, evaluation of, 420
Normal lung development and cell differentiation, cytokines with essential role in, 195-197
Normal pregnancy, exercise in
bicycle, *see* Bicycle exercise during normal pregnancy
Doppler changes across maternal mitral valve during, 254-255
NST (nonstress test), 422-423
Nutrition, role of, in PROM, 355-358

O_2, *see* Oxygen
Obstetric history, PROM and, 361-362
Obstetric risk factors in PROM, 358-362
Occupation, women's
common health hazards in, 7-9; *see also* Vibration exposure in pregnancy
type of, and LBP in pregnant women, 65
Occupational distribution of women workers, gender labeling of jobs, 6-7
Occupational health, history of, 77-78
Occupational noise, *see* Vibration exposure in pregnancy
Odds ratio (ORs) of LBP disorders in drivers, 45-48
Open to inactive transition, gating and, 523-524
Organ maturation other than lungs, effects of maternal glucocorticoid of pPROM on, 440
Organization of LBP treatment in pregnant women, 66-67
Outcome
BPD, in twins, 208
of maternal glucocorticoid therapy of pPROM, 445-447
pregnancy, *see* Pregnancy outcome
see also Fetal survival; Maternal morbidity; Mortality, neonatal, PROM and; Neonatal

morbidity with PROM; Neonatal survival, PROM and; Prognosis
Overdistension, uterine, PROM and, 360-361
Oxidation, *see* Metabolism, exercise effects on, during pregnancy; Substrate metabolism in developing heart
Oxygen (O_2)
  blood flow patterns and deprivation of, in fetus, 589-590
  myocardial metabolism in states of O_2 insufficiency, heart development and, 552-553
  ventilatory equivalents for, during exercise by pregnant, postpartum, and nonpregnant women, 270
  see also Oxygen consumption; Oxygen pulse
Oxygen (O_2) consumption
  in intact developing hearts, 550, 551
  see also Aerobic fitness in pregnancy; Oxygen consumption during exercise by pregnant women
Oxygen (O_2) consumption during exercise by pregnant women, 235-236
  maximal, *see* Aerobic fitness in pregnancy
  and postpartum and nonpregnant women, 267-268
Oxygen (O_2) pulse during exercise by pregnant, postpartum, and nonpregnant women, 268, 269

Pain, low back, *see* Lumbar back pain and posterior pelvic pain in pregnant women; Whole-body vibration exposure, LBP disorders and
Palate, cleft, as effect of maternal glucocorticoid therapy of pPROM, 440
Parents of fetus or neonate with neural crest-associated conotruncal defects, counseling for, 476-478
Participation to labor force, *see* Labor force participation, women's
Passive smoking, maternal and fetal physiological effects of active versus, 123-124
Pathobiology of PROM, *see* Fetal membrane, form and function of; Maternal infection(s) in PROM; Risk factor(s) in PROM
Pathogenesis of congenital cardiovascular malformations, 465
Pathologies
  mediated by dysfunctional ion channels, 526-528
  see also Vasculopathies *and specific conditions*
Pathophysiology of DCI, 294-295
PCP (phencyclidine; angel dust), placental transfer of, 149-151
Pediatric cardiovascular disease, *see* Genetics of pediatric cardiovascular disease
Pelvic pain, *see* Lumbar back pain and posterior pelvic pain in pregnant women
Peptides, elastin, ductus smooth muscle cell migration, fibronectin and, 534
Perinatal substances abuse
  introduction to, 91-92
  see also Alcohol; Cocaine; Nicotine; Placental transfer of substances of abuse
Peripheral vasculature, maternal, Doppler changes in, during exercise in normal pregnancy, 256-258
PG(s), *see entries beginning with term*: Prostaglandin
Pharmacodynamics of nicotine, maternal and fetal physiological effects and, 116-117
Pharmacokinetics of nicotine, maternal and fetal physiological effects and, 116
Pharmacology of cocaine
  and cocaine teratogenicity, 94
  maternal cardiovascular effects and, 107-108
Phencyclidine (PCP; angel dust), placental transfer of, 149-151
Phenotype in neural crest ablation model of neural crest-associated conotruncal defects, 474
Physical activity during pregnancy, pregnancy outcome and, 70-76
  physiological changes in pregnancy and, 70-71
  recommended approach to, 74
  recreational, *see* Regular recreational physical activity during pregnancy, effects of
  in workplace, 71
  see also Exercise in pregnancy
Physicochemical properties of substances of abuse, placental transfer and, 150, 151
Physics, fundamental vibration, 78-82
Physiological changes in pregnancy, physical activity and, 70-71
Physiological effect(s), *see* Nicotine, maternal and fetal physiological effects of *and entries beginning with terms*: Physiological effect
Physiological effect of altitude, relative hypoxemia as, 304-306
  during exercise, 305-306
  at rest, 304-305
Physiological effect of exercise in pregnancy
  of regular recreational exercise, 71-72
  of water exercise, 285-290
Physiological research on developing heart, 589-594
  on blood flow patterns, *see* Blood flow patterns in developing heart, physiological research on
  on effects of congenital cardiac lesions on cardiac morphology, 592-593
  fetal surgery and, 593-594
Physiology of exercise during pregnancy, 213-221
  of aerobic fitness, *see* Aerobic fitness in pregnancy
  of cardiac output, 214-215; *see also* Cardiac output, exercise in pregnancy and
  of diving, 293-294
  of heart rate, *see* Fetal heart rate; Maternal heart rate, and exercise in pregnancy
  introduction to, 213-214
  of mechanical efficiency, 218-219
  of stroke volume, 215-216; *see also* Stroke volume, exercise in pregnancy and
Placement of cervical cerclage after pPROM, 454
Placenta previa, nicotine-associated, 154-158
Placental tissue, cocaine effects on prostaglandin production by, 144
Placental transfer of substances of abuse, 147-153
  and effects of substances of abuse, 147-151
  physicochemical properties of substances of abuse and, 150, 151

principles of, 147
Placental volume, effects of high-intensity exercise by pregnant athletes on, 279-280
Plasma lactate during exercise by pregnant, postpartum, and nonpregnant women, 270, 271
Plasticity of pulmonary vasculature, ECM and, 538
Point (or area) of contact of vibration excitor with the body, 34
Polydrug use, impact of, on fetal development, 100-101
Portable whole-body vibration (WBV) meters, 87
Position changes during exercise in pregnancy, Q in response to, 255-256
Posterior pelvic pain, *see* Lumbar back pain and posterior pelvic pain in pregnant women
Posterior pelvic pain provocation test, 63-65
Postimplantation period, alcohol effects during, 129-130
Postpartum low back pain (LBP), 67
Postpartum women, exercising, 234-235
see also Aerobic exercise in pregnancy and postpartum, cardiovascular responses to; Ventilatory responses to exercise by pregnant, postpartum, and nonpregnant women
Postural load, and WBV exposure, LBP disorders and, 40, 43-44, 47, 48
pPROM, *see* Preterm premature rupture of membranes
Precocial animals, evidence of NIHL in, 23-26
Predisposition, genetic, to BPD, 206-209
Preembryonic period, alcohol effects during, 135
Pregnancy outcome
with GDM, exercise effects on, 335-339; *see also* Exercise in pregnancy; Physical activity during pregnancy, pregnancy outcome and
with midtrimester PROM, 389-390; *see also* Premature rupture of membranes
nicotine effects on, 117-118; *see also* Perinatal substances abuse
see also specific conditions
Preimplantation period
cocaine effects during, 144
see also Preimplantation period, ethanol-enhanced accelerated development in
Preimplantation period, ethanol-enhanced accelerated development in, 128-133
calcium in, *see* Calcium in ethanol-induced accelerated development in preimplantation period
mechanisms of, 130-133
see also Signal transduction in preimplantation period
Preload (end-diastolic volume), ventricular function with immature heart and, 496-499
Premature rupture of membranes (PROM)
introduction to, 343
see also Clinical course of PROM; Fetal membrane, form and function of; Histopathology of PROM; Maternal infection(s) in PROM; Midtrimester premature rupture of membranes; Neonatal consequence(s) of PROM; Preterm premature rupture of membranes; Risk factor(s) in PROM; Term patients, PROM in; Therapy and management of PROM
Preterm delivery
effects of high-intensity exercise by pregnant athlete on, 281
PROM and, fetal complications due to, 370
Preterm infants, PROM and
effects of maternal glucocorticoid therapy of pPROM on infants, 442-445
and prematurity as consequence of PROM, 375-376
Preterm labor (PTL)
with GDM, exercise effects on, 335-339
PROM after, 361
Preterm premature rupture of membranes (pPROM), 454-457
cervical cerclage and, 453-454
pulmonary maturation in, *see* Pulmonary maturation in pPROM
twin gestation and, 454-457
see also Fetal biophysical assessment in pPROM patients; Maternal infection(s) in pPROM; Premature rupture of membranes
Prevalence
of fetal cocaine exposure, 99-100
see also Incidence; Prevalence of LBP disorders *and specific conditions*
Prevalence of LBP disorders, 45-49
in bus drivers, 45, 46
of sick leave due to LBP disorders, 45
in tractor drivers, 46-48
Prevention
of ectomesenchymal tissue migration abnormalities, 468
of ethanol effects on embryonic neuronal development with retinoic acid, 134-135
preventive maternal antibiotic therapy of pPROM, 427-429
Professional drivers, *see* Whole-body vibration exposure, LBP disorders and
Prognosis
of lateralization defects, 585-586
see also Outcome
Proinflammatory cytokines, and pulmonary surfactant production, 197-200
Prolonged exercise, effects of, in pregnancy, 315-327
on glucose, 319-310, 323-326
on insulin, β-hydroxybutyrate, and FFAs, 321
on lactate, 320-321
on maternal thermal response, 321-322
of substrates and hormones, 319-320
on $\dot{V}O_2$ max, RER, and HR, 319, 322
PROM, *see* Premature rupture of membranes
Prospective trials of maternal antibiotic therapy of pPROM, 429-436
through amniotic infusion, 378, 435
latency and, 377-378, 432
limitations of, 434-435
maternal morbidity in, 432-433
neonatal morbidity in, 433-434

suggested antibiotic regimens, 435
with suspected intra-amniotic infection, 435-436
Prospective trials of maternal glucocorticoid therapy of pPROM, 442-447
outcome of, 445-447
in preterm infants, 442-445
Prostaglandin(s) (PGs), cocaine effects on production of, by placental tissue, 144
Prostaglandin E_2 (PGE_2) receptors, regulation and functions of cerebrovascular, during development, 164-172
[^{3}H]Prostaglandin E_2 (PGE_2), binding assays of cerebrovascular, 165
[^{3}H]Prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$), binding assays of cerebrovascular, 165
Prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) receptors, regulation and functions of cerebrovascular, during development, 164-172
Protein(s)
alcohol effects on GAP43, 135
maternal C-reactive, and intrauterine infection in pPROM, 413
mechanisms of I-NO-induced pulmonary surfactant increase by, 178-180
microfibrillar, genetic defects of, vasculopathies and, 565-566
mitochondrial, deficiencies of, and pediatric cardiomycpathy, 568
see also C-myc protein expression; Protein(s) in heart development; Protein mutations, and cardiomyopathy
Protein(s) in heart development, 485-492
contractile proteins, 485-489
membrane proteins, 489-492
see also Ion channel function; Ion channel structure
Protein mutations, and cardiomyopathy, 566-567
sarcomeric protein mutations, 566-567
structural myocardial protein mutations, 567
PTL, *see* Preterm labor
Pulmonary atelectasis, severe, effects of HPV modulators on response to I-NO in, 186-193
Pulmonary circulation, *see* Ductus arteriosus, cell-ECM interactions in, perinatal pulmonary circulation and
Pulmonary hypoplasia, PROM and
with midtrimester PROM, 393-396
as neonatal consequence of PROM, 377
Pulmonary maturation in pPROM
evaluation of, 413-415
pPROM with pulmonary immaturity, inpatient versus home management of, 457-459
see also Maternal glucocorticoid therapy for pulmonary maturity induction in pPROM; Pulmonary hypoplasia, PROM and
Pulmonary surfactants, *see* Cytokines, and pulmonary surfactant production; Nitric oxide, pulmonary surfactants and
Pulmonary vascular pathologies, 537-539
ductus relationship to other, 537-538
ECM dysregulation and, 538-539
Pulmonary vasculature, ECM and plasticity of, 538
Pulmonary vasoconstriction, hypoxic, effects of modulators of, on response to I-NO in severe pulmonary atelectasis, 186-193
Pyrexia, maternal, and intrauterine infection in pPROM, 413

Q, *see* Cardiac output, exercise in pregnancy and

Reactivity, nitric oxide, pulmonary surfactants and, 174-175
Recreational physical activity, *see* Regular recreational physical activity during pregnancy, effects of
Regimens, suggested maternal antibiotic, for pPROM, 435
Regular low back pain (LBP), vibration exposure and, 49
Regular recreational physical activity during pregnancy, effects of, 71-74
and early pregnancy events, 72
on fetal neurodevelopment, 73-74
on fetoplacental growth, 72-73
on late pregnancy events, 72, 73
physiological effects, 71-72
Relative hypoxemia, *see* Physiological effect(s) of altitude, relative hypoxemia as
Relaxation, myocardial, and myocardial contractility in developing heart, 515-516
Remote-from-term premature rupture of membranes, inpatient versus home management of, 457-459
Removal of cervical cerclage after pPROM, 453-454
Reproduction
at altitude, 306-307
see also specific aspects of reproduction
Reproductive tract, alcohol effects on maternal, 129
RER (respiratory exchange ratio) during exercise by pregnant, postpartum, and nonpregnant women, 268-269
Research on exercise effects during pregnancy, 222-231
on diving during pregnancy, 295-296
on fetal growth and development, 223-229
impact of, on aerobic fitness guidelines for exercising pregnant women, 229-230
Research on fetal cocaine exposure effects, 100-105
initial phase of, 100
middle phase of, 100-103
new directions in, 103-105
Resonance (natural vibration frequency)
of abdominal segment in pregnancy, 33-35
vibration at, in seated humans, 57
of WBV, 79-80
Respiratory exchange ratio (RER), and exercise in pregnancy
effects of prolonged exercise on, 319, 322
and by postpartum and nonpregnant women, 268-269
Respiratory system, *see* Fetal respiratory system; Lung development; Respiratory system, and exercise in pregnancy; Ventilation *and entries*

beginning with terms: Bronchopulmonary, Pulmonary
Respiratory system, and exercise in pregnancy
high-intensity exercise effects by pregnant athletes on, 280
measuring variables of, 213; *see also specific respiratory system variables*
and in postpartum and nonpregnant women, 266, 267
see also Respiratory exchange ratio, and exercise in pregnancy
Rest period, altitude exposure during
physiological responses to, 304-305
short-term, maternal and fetal effects of, 308-312
Resting to open transition, ion channel gating and, 522-523
Restrictive deformation, as neonatal consequence of PROM, 377
Retinoic acid preventing ethanol effects on embryonic neuronal development, 134-135
Ribonuclease protection assay of cerebrovascular $PGF_{2\alpha}$ receptors, 167-168
Ribonucleic acid (RNA), messenger, effects of changes in cerebrovascular $PGF_{2\alpha}$ receptors on, 166-168
Right isomerism, as lateralization defect, 585
Right-left development, *see* Genetics of left-right development, heterotaxia and
Risk factor(s)
for BPD, genetic susceptibility as, 206-209
see also Risk factor(s) in PROM
Risk factor(s) in pPROM, 451-457
cervical cerclage as, 453-454
HSV infection as, 451-453
twin gestation as, 454-457
Risk factor(s) in PROM, 355-362
associated with second-trimester PROM, 390
meteorological, 362
obstetric, 358-362
smoking, nutrition, and other maternal behavioral factors as, 355-358
see also Risk factor(s) in pPROM
RNA (ribonucleic acid), messenger, effects of changes in cerebrovascular $PGF_{2\alpha}$ receptors on, 166-168
Rupture of membranes, *see* Premature rupture of membranes

Sarcolemma, Ca transport across, and myocardial contractility in developing heart, 510-512
Sarcomeric proteins, mutations of, and pediatric cardiomyopathy, 566-567
Sarcoplasmic reticulum (SR), and heart development
Ca transport across, 513-514
role of, 490-492
Seated jolt/vibration exposure, mechanical stress during, 54-60
epidemiology of, 54-55
etiology of, 55-56
practical examples of, 56-58
solutions to, 58
Second-trimester premature rupture of membranes (PROM), risk factors associated with, 390
Selection of antibiotics for pPROM, 429
Severe pulmonary atelectasis, effects of HPV modulators on response to I-NO in, 186-193
Short-term altitude exposure, maternal and fetal effects of, at rest and during exercise, 308-312
Sick leave due to LBP disorders, prevalence of, 45, 46
Signal, M-mode, interpretation of, 250-251
Signal acquisition
in Doppler echocardiography, 254
in M-mode echocardiography, 250
Signal conditioners, WBV measurement with, 87
Signal transduction in preimplantation period
by calcium, ethanol effects on, 132
cocaine effects on, 144-145
Single gene defects, and CHD, 571-572
Situs, abnormal, congenital cardiovascular malformations and, 470-471
Situs inversus, as lateralization defect, 583-585
levocardia with, 584-585
Situs solitus, dextrocardia with, as lateralization defect, 584
Smoking
role of, in PROM, 355-358
see also Nicotine
Smooth muscle cell migration, cell-ECM interactions and ductus
elastin peptides, fibronectin and, 534
hyaluronan and upward, 535
Social drug abuse, *see* Perinatal substances abuse
Sociodemographic perspectives on working pregnant women, 3-10
common health hazards in women's occupation, 7-9; *see also* Vibration exposure in pregnancy
gender labeling of jobs and occupational distribution of women workers, 6-7
labor force participation and, *see* Labor force participation, women's
Sodium/calcium (Na/Ca) exchanger, and heart development, 490
Sound(s)
noise levels of common, 9
speech, recorded in uterus, recognition of, 12-14
see also Sound transmission to fetus
Sound transmission to fetus, 14-19
of exogenous sounds, fetal auditory response to, 14-16
to fetal head, *see* Fetal head, sound transmission to
model of, into fetal inner ear, 18-19
via bone conduction, 16-17
Sources of vibration, measurement of, 78-79
Speech detection by fetus, 17-18
Speech sounds recorded in uterus, recognition of, 12-14
Spine, effects of seated jolt/vibration exposure to, 57
SR, *see* Sarcoplasmic reticulum, and heart development

Standard pressure-altitude table, 304
Standards setting limits to vibration exposure, 82-85
Steroids, *see* Maternal glucocorticoid therapy for pulmonary maturity induction in pPROM
Strength of fetal membrane, 346
Streptococcal infection, *see* Group B streptococcus infection
Stress
  adaptation to combined altitude and pregnancy, 307-308; *see also* Altitude, exercise at, in pregnancy
  during seated jolt/vibration exposure, *see* Seated jolt/vibration exposure, mechanical stress during
  hardening of fetal membrane due, 346-347
Stroke volume (SV), exercise in pregnancy and
  measurement of, 215-216
  pregnancy effects on, 237
Structural myocardial protein mutations, and pediatric cardiomyopathy, 567
Structural pulmonary maturation, maternal glucocorticoid therapy effects on, in pPROM, 439-440
Stud mounting for accelerators measuring WBV, 86
Subendothelium, hyaluronan in, cell-ECM interactions in ductus arteriosus and, 531-532
Substances abuse, *see* Perinatal substances abuse
Substrate(s)
  prolonged exercise effects on, in pregnancy, 319-320
  see also Substrate metabolism in developing heart
Substrate metabolism in developing heart, 542-563
  compartmentation of metabolic energy and, 558
  enzyme differentiation and, 545-546
  in hypoxia, 556-557
  in intact hearts, *see* Intact developing hearts
  in ischemia, 553-556
  mitochondrial morphology and function and, 546-547
  myocardial metabolism and, *see* Myocardial metabolism
  in tachycardia, 557-558
α_1 (alpha$_1$) Subunit, and heart development, 489-490
Surface, coupling efficiency between transducer, exciter and, vibration of abdominal segment and, 34-35
Surfactants, pulmonary, *see* Cytokines, and pulmonary surfactant production; Nitric oxide, pulmonary surfactants and
Surgery
  cervical, PROM and, 359-360
  fetal, role of physiological research in, 593-594
Survival, *see* Fetal survival; Neonatal survival, PROM and
Susceptibility to BPD, 206-209
SV, *see* Stroke volume, exercise in pregnancy and
Swimming, *see* Water exercise in pregnancy

Tachycardia
  maternal, and intrauterine infection in pPROM, 413
  substrate metabolism in developing heart in, 557-558
Tape recorders, analog and DAT, WBV measurement with, 88
Targeted growth, abnormal, and congenital cardiovascular malformations, 470
Teratogenic effects
  of alcohol, 127-128
  of cocaine, *see* Teratogenic effects of cocaine
  of maternal glucocorticoid therapy of pPROM, 440
  of PROM, restrictive deformations as, 377
Teratogenic effects of cocaine, 93-98
  on embryogenesis, 93
  mechanisms of teratogenicity, 96-97
  types of cocaine-related malformations, 94-96
Term patients, PROM in, 402-408
  diagnosis of, 402
  management of, 402-407, 459
TGF-α (transforming growth factor-α), role of, in normal lung development and cell differentiation, 195-196
TGF-β, *see* Transforming growth factor-β
Therapy and management
  of DCI, 299-300
  of neonates and children with life-threatening neural crest-associated defects, 478-480
  retinoic acid, preventing ethanol effects on embryonic neuronal development, 134-135
  see also Therapy and management of LBP in pregnant women; Therapy and management of PROM
Therapy and management of LBP in pregnant women, 65-67
  of lumbar back pain, 65-66
  organizing, 66-67
  of posterior pelvic pain, 66
Therapy and management of pPROM
  with fetal biophysical assessment, 423-424
  with HSV infection, 452-453
  inpatient versus home, 457-459
  with tocolysis, 456-457
  in twin gestation, 456
  see also Maternal glucocorticoid therapy for pulmonary maturity induction in pPROM; Maternal antibiotic therapy of pPROM
Therapy and management of PROM
  clinical course and, 374
  to decrease neonatal consequences of PROM, 377-378
  of infections responsible for PROM, effects of, on PROM, 352; *see also* Maternal antibiotic therapy of pPROM
  of midtrimester PROM, 396-398, 457
  in term patients, 402-407
  see also Therapy and management of pPROM
Thermal response, *see* Maternal thermal response to high-intensity exercise
Thermoregulation, fetal, exercise effects on, 225-227
Thin-filament regulatory proteins, heart development and, 487
Thinning of fetal membrane, 346-347

"Threshold Limit Values and Biological Exposure Indices" ("TLVs and BEIs; ACGIH publication), 83-84
Tidal volume during exercise by pregnant, postpartum, and nonpregnant women, 266, 267
Timing of next pregnancy, LBP and, 67
"TLVs and BEIs" ("Threshold Limit Values and Biological Exposure Indices"; ACGIH publication), 83-84
TnC (troponin C), heart development and, 487
TNF-α (tumor necrosis factor-α), role of, in normal lung development and cell differentiation, 197-198
TnI (troponin I), heart development and, 487-488
TnT (troponin T), heart development and, 487
Tobacco, *see* Nicotine
Tocolysis in pPROM, 456-457
Toluene, placental transfer of, 148, 149
Tractor drivers, *see* Whole-body vibration exposure, LBP disorders and
Transducer, coupling efficiency between surface, exciter and, vibration of abdominal segment and, 34-35
Transforming growth factor-α (TGF-α), role of, in normal lung development and cell differentiation, 195-196
Transforming growth factor-β (TGF-β)
  role of, in normal lung development and cell differentiation, 196-197
  in subendothelium, cell-ECM interactions in ductus arteriosus and, 531-532
"Transit Noise and Vibration Impact Assessment Manual" (FTA publication), 84-85
Transmission of sound, *see* Sound transmission to fetus
Treatment, *see* Therapy and management
Trichomoniasis, PROM and, 352-353
Troponin C (TnC), heart development and, 487
Troponin I (TnI), heart development and, 487-488
Troponin T (TnT), heart development and, 487
Truck drivers, *see* Whole-body vibration exposure, LBP disorders and
"T's and blues", placental transfer of, 149-151
Tumor necrosis factor-α (TNF-α), role of, in normal lung development and cell differentiation, 197-198
Twin(s), study of BPD in, 206-209
Twin gestation, pPROM and, 454-457

Ultrasound
  in prediction of pulmonary hypoplasia due to midtrimester PROM, 395
  see also Doppler echocardiography of maternal and fetal cardiovascular response to exercise during pregnancy; M-mode echocardiography
Umbilical artery, fetal, Doppler changes in, during bicycle exercise in normal pregnancy, 258-259
Umbilical blood flow, nicotine effects on, 118-121
Unexpected loads, catching expected and, while seated, mechanical stress of, 57-58
Unfavorable cervix, term patients with, management of PROM in, 403-407
Uterine circulation
  cocaine effects on, 110-112
  nicotine effects on, 118-121
Uterine contractile activity
  effects of high-intensity exercise by pregnant athlete on, 281
  see also Myometrial contractile activity, cocaine effect(s) on
Uterine overdistension, PROM and, 360-361
Uteroplacental circulation and blood flow during exercise
  Doppler changes in, 256-257
  exercise effects on, 223-225
Uterus
  recognition of speech sounds recorded in, 12-14
  see also entries beginning with term: Uterine

Vaginosis, bacterial, PROM and, 353-354
Vascular development, blood flow patterns and, 590-591
Vascular effects
  of cocaine, 143-144; *see also* Cardiovascular effects of cocaine
  see also Cardiovascular effects of exercise in pregnancy
Vasculature
  brain, effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptors on vasomotor responses of, 165-166
  maternal peripheral, Doppler changes in, during exercise in normal pregnancy, 256-258
Vasculopathies
  pediatric, 565-566
  see also Pulmonary vascular pathologies
Vasoactive mediators, changes in, and cell-ECM interactions in ductus arteriosus, 537
Vasoconstriction, hypoxic pulmonary, effects of modulators of, on response to I-NO in severe pulmonary atelectasis, 186-193
Vasomotor responses of brain vasculature, effects of cerebrovascular PGE_2 and $PGF_{2\alpha}$ receptors on, 165-166
Vectors of vibration, resonance of abdominal segment and 34
Velocity of vibration, 79
Ventilation
  during exercise by pregnant, postpartum, and nonpregnant women, 266, 267
  see also entries beginning with term: Ventilatory
Ventilatory equivalents for oxygen during exercise by pregnant, postpartum, and nonpregnant women, 270
Ventilatory frequency during exercise by pregnant, postpartum, and nonpregnant women, 266, 267
Ventilatory responses to exercise by pregnant, postpartum, and nonpregnant women, 263-276
  discussion on, 271-276
  effects of, on metabolic parameters, 267-269
  effects of, on respiratory function, 266, 267

effects of, on ventilatory equivalents and plasma lactate, 270, 271
Ventricular function, *see* Heart development effects on ventricular function
Ventricular interaction, effects of heart development on, 500-501
Ventricular mass, effects of birth on, 501-504
Vibration exposure in pregnancy
introduction to, 1-2
see also Abdominal segment vibration in pregnancy; Fetal hearing; Lumbar back pain and posterior pelvic pain in pregnant women; Physical activity during pregnancy, pregnancy outcome and; Seated jolt/vibration exposure, mechanical stress during; Sociodemographic perspectives on working pregnant women; Whole-body vibration exposure, LBP disorders and; Whole-body vibration measurement
$\dot{V}O_2max$, *see* Aerobic fitness in pregnancy
Voltage-dependent gating, *see* Gating, as ion channel function

Water exercise in pregnancy, 285-302
physiological effects of, 287-290
see also Diving during pregnancy
Waveforms, Doppler, interpretation of, 254
WBV, *see* Whole-body vibration exposure, LBP disorders and; Whole-body vibration measurement
Weakened membrane hypothesis of PROM, 383-384
Weight, *see* Fetal weight
Whole-body analyzers, laboratory based, WBV measurement with, 87-88
Whole-body vibration (WBV) exposure, LBP disorders and, 38-53
discussion on, 44-51
postural load and, 40, 43-44, 47, 48
vibration dose and, 40-44, 47, 48
Whole-body vibration (WBV) measurement, 77-89
with accelerators, 85-86
with analog and DAT recorders, 88
with calibrators, 86
fundamental physics of vibration and, 78-82
history of WBV and occupational health and, 77-78
with laboratory based whole-body analyzers, 87-88
with portable WBV meters and signal conditioners, 87
practical approach to, 78
and standards and guidelines setting limits to WBV, 82-85
Whole-body vibration (WBV) meters, portable, 87
Working pregnant women, *see* Vibration exposure in pregnancy
Workplace
physical activity in, physiological effects of, 71
see also Vibration exposure in pregnancy